

# **Solid Waste Industry for Climate Solutions**

*Allied Waste Services, Inc.  
County Sanitation Districts of Los Angeles County  
County of Orange, Integrated Waste Management Department  
Norcal Waste Systems, Inc.  
Regional Council of Rural Counties  
Republic Services, Inc.  
SCS Engineers  
Waste Connections, Inc.  
Waste Management*

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Mr. Winston Hickox, Chairman  
And Members  
Cal/EPA Market Advisory Committee  
1001 I Street, 25<sup>th</sup> Floor  
Sacramento, CA 95826  
Via e-mail: [climatechange@calepa.ca.gov](mailto:climatechange@calepa.ca.gov)

## ***Subject: Comments on California Market Advisory Committee Draft Report***

Thank you for the opportunity to comment on the draft California Market Advisory Committee (CMAC) Draft Report, entitled, "Recommendation for Designing a Greenhouse Gas Cap-and-Trade System for California (Draft Report)." We understand that comments on the Draft Report are due by June 15, 2007 as the CMAC has the intent to finalize this the Draft Report by June 30, 2007.

The undersigned are representatives of an informal organization of solid waste management and recycling organizations known as the Solid Waste Industry for Climate Solutions (SWICS). The entities represented by this organization provide comprehensive waste management, biomass energy and recycling services throughout California. *The purpose of this organization is to provide Climate Change policy makers with the most accurate information about our industry and our potential contributions to climate change solutions.*

## ***Strong Overall Support for the Draft Report***

SWICS commends the CMAC for an excellent report and we strongly support the content and recommendations of the report, especially with regard to the report's conclusion that it is not practical for landfills to be part of a Cap and Trade program and recognition of the valuable contribution that landfills can make to offset generation. As several

commenters have noted, the *Draft Report provides an excellent road map for the California Air Resources Board (CARB) to develop market-based programs to address climate change.*

SWICS recognizes the challenges in developing a market program and commit to provide support in the effort. We also recognize that a full reduction program will involve a mix of Cap and Trade, and traditional “command and control.”

### ***Biological Processes should not be Subject to a Cap-and-Trade Program.***

SWICS strongly supports the Draft Report’s conclusion that widely accepted accurate monitoring and estimating procedures for GHG emissions from biological processes, such as landfills, simply does not exist. For example, how can California establish a Cap on GHG emissions from a landfill if there is not clear, accurate and verifiable methods to determine what emissions are actually coming from landfills? This is contrary to some comments that CMAC has received on GHG emissions from landfills. Some anti-landfill advocates express a belief that landfills are a significant source of GHG emissions and should be part of a Cap and Trade Program. Despite the lack of monitoring methods that would meet the verification needs of a Cap and Trade Program, *SWICS believes that existing inventories and estimates clearly indicate that landfills are not a significant source of GHG emissions – particularly if a carbon “mass balance” is applied to well operated landfill.*

### ***Landfill Emission Estimates not Reliable nor Widely Accepted***

In the course of evaluating the carbon flows within landfills, most methodologies discuss the inherent uncertainties and difficulties in developing a detailed landfill emission profile. IPCC, EPA and academic studies alike, delineate the uncertainties associated with modeling estimates of waste composition and mass, methane generation potential, gas collection efficiency and methane oxidation that occurs in daily, intermediate and final landfill cover. *These measurement difficulties coupled with the acknowledgement that carbon sequestration renders many landfills as carbon sinks, has resulted in many domestic and international protocols and programs either ignoring landfills based upon their insignificant contribution to GHG emissions, or treating landfills as sources of emissions reductions.*

The Draft Report does not recommend inclusion of landfills into a Cap and Trade Program for a very good reason: There is no accepted (by industry, government, or environmental groups) model or practice for quantifying landfill GHG emissions. The lack of a widely accepted and verified model for determining landfill GHG emissions renders developing a non-ambiguous cap on landfills an impossibility. *Since there is no accepted way of measuring fugitive emissions from a landfill, it would be difficult to establish and then ensure compliance with a cap.*

A good example of this problem is the number used for estimated landfill GHG emissions in the Draft Report. The last page of the Draft Report (page 101) cites the California

Energy Commission's (CEC) estimate of GHG emissions from landfills as being 8.4 MMTCO<sub>2</sub>E in 2004. This value is much less than the estimates that were used by the California Climate Action Team a little over one year ago. Previous estimates of landfill GHG emissions have ranged as high as 16-20 MMTCO<sub>2</sub>E per year. The current CEC estimate of 8.4 MMTCO<sub>2</sub>E is based on estimates by individual air districts of emissions from landfills within their districts. Yet only 2 of the 38 air districts have actually provided any information on how these numbers were derived. Even those 2 air districts do not appear to be using estimating procedures based on currently published GHG protocols for landfill emissions (e.g., USEPA climate leaders and 2006 IPCC Guidelines for National Greenhouse Gas Inventories). More recent computations by CARB indicate that estimates of fugitive emissions from landfills may be even lower.

Even the CEC-based number of 8.4 MMTCO<sub>2</sub>E appears substantially higher than our industry's own estimates using measurement protocols we are developing (See attached paper by Ray Huitric of the LACSD estimating landfill gas capture rates to exceed 95%). We are currently working with the CARB to develop better uniform landfill gas emission estimates for gross inventory development purposes. In addition, individual members of our SWICS group are working with the CEC and the California Integrated Waste Management Board (CIWMB) on a study to develop better protocols for estimating landfill GHG emissions. However, the results of this study are not anticipated to be complete until 2009 or later.

### ***Landfills Are Essential Public Services***

Landfills, whether publicly- or privately-owned, are essential public services. This fact has been recognized in various regulations at the state and local level in California. Landfills are essential in that they remain a primary means for solid waste management in the state, and the lack of landfill capacity would be a major public health and safety issue. As such, landfills must grow to keep up with the demands of a growing California population. Despite extensive recycling efforts in the state, landfill disposal continues to grow. With this in mind, we encourage the Cal/EPA to consider an exemption from greenhouse cap and trade for all recognized essential public services, such as landfills. We do not believe that placing restrictions on the growth of these essential services makes good sense from a public policy perspective. For example, this was recognized by the SCAQMD in developing the RECLAIM program. The SCAQMD excluded essential public services such as landfills and wastewater treatment plants.

The solid waste industry in general, and landfills in particular, working in a public-private partnership with agencies that regulate our operations as well as the public we serve have made tremendous strides in reducing GHG emissions over the past 30 years. This has largely occurred through the development of market incentives and regulatory control strategies that are implemented by the public and private solid waste industry. The attached paper by Keith Weitz et al documents the GHG reductions that have been implemented by the solid waste industry, including landfills, in the United States during the past 30 years. Similar progress has been made in California. There are no other

industries being considered for GHG regulations by CARB and Cal/EPA that can demonstrate similar reductions and progress in addressing GHG emissions.

GHG controls on essential public services, such as landfills, are most appropriately applied through regulatory controls as is evidenced by the progress of the past 30 years. This has been the approach to regulating and controlling landfill gas emissions in California to date and should continue to be the preferred approach rather than inclusion of landfills in a Cap and Trade Program.

### ***Carbon Sequestration in Landfills***

A number of international and domestic protocols including the Intergovernmental Panel on Climate Change (IPCC), and the U.S. Environmental Protection Agency (EPA), recognize carbon storage in landfilled material as a sink in calculating carbon emissions inventories. *These protocols recognize that when wastes of a biogenic origin are deposited in landfills and are not completely decomposed, the carbon that remains is effectively removed from the global carbon cycle, or sequestered.*

For example, the EPA has published reports that evaluate carbon flows through landfills to estimate their net greenhouse gas emissions (USEPA 1998, 2002). The methodology EPA employed recognizes carbon storage in landfills. In these studies of municipal solid waste landfilling, EPA summed the GHG emissions from methane generation and transportation-related CO<sub>2</sub> emissions, and then subtracted carbon sequestration (treated as negative emissions). The projected national average of net GHG emissions for landfills was minus 0.02 MTCE/Wet Ton, showing that landfills are "carbon sinks" (USEPA 1998, Exhibit 7-6).

These same methodologies that recognize carbon storage in landfills are also employed by EPA in calculating the greenhouse gas emissions related to landfilling hardwood, yard trimmings and food scraps for the Inventory of U.S. GHG Emissions and Sinks (USEPA 2005). In EPA's inventory for 2003, landfills are reported to have nationwide methane emissions of 131.2 Tg CO<sub>2</sub> equivalents (USEPA 2005, Table 8-1). For the same year, reductions (storage) of carbon dioxide in the form of landfilled hardwood and landfilled yard trimmings and food scraps are reported to amount to 155 Tg CO<sub>2</sub> equivalents (Table 7-5) and 10.1 Tg CO<sub>2</sub> equivalents (Table 7-1) respectively. This demonstrates that by using EPA procedures and attributing carbon storage to the landfill, the national greenhouse gas footprint for landfills in 2003 was estimated to be minus 33.9 Tg CO<sub>2</sub> equivalents, or a net carbon sink.

Life-cycle analyses of waste management practices offer further support for the premise that landfilling biogenic carbon can result in net greenhouse gas reductions. EPA's Municipal Solid Waste Decision Support Tool (DST), a life-cycle analysis tool that was developed to help communities optimize the environmental benefits of their waste management practices, as well as to support the EPA Climate Leaders program, includes a calculator for estimating the carbon storage potential of landfills.

The last page of the Draft Report (page 101) also notes Carbon Sinks as a category under "Land-Use Change and Forestry" and assigns the value of -21.0 MMTCO<sub>2</sub>E for this

category. Unfortunately, there appears to be a failure to recognize *that -6.9 MMTCO<sub>2</sub>E is due to carbon sequestration in landfills*. This is based on CEC inventory estimates of the amount of organic lignins and hemi-cellulose contained in landfill waste that does not decompose in the anaerobic environment of California landfills. You will note that this “sink” (-6.9 MMTCO<sub>2</sub>E) is roughly the same as the amount of “emissions” (8.4 MMTCO<sub>2</sub>E) that are credited to landfills. In fact, the actual amount of carbon sequestration could be much higher by counting, as the IPCC recommends in their recent 2006 Guidelines for Solid Waste Disposal, sequestration associated with paper and cardboard that is disposed in landfills.

Carbon sequestration in anaerobic landfills is widely acknowledged in the literature and in existing protocols and inventory procedures developed by:

- USEPA (<http://www.epa.gov/climatechange/wycd/waste/SWMGHGreport.html> and <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>), and
- IPCC (<http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol5.htm>).

### ***“Operational Control” is Key to Assigning GHG Accountability and Responsibility***

For gross international, national and statewide inventories landfill carbon sequestration has typically been tabulated in the “Forest Products” sectors. Yet it is not the nature of the forest products alone that leads to this sequestration. Existing protocols recognize that forest products managed as waste in an aerobic environment will eventually decompose to generate CO<sub>2</sub>. The sequestration that occurs in the landfill is a direct result of the anaerobic environment of the landfill – not the nature of the “forests product” (e.g., lumber, paper, cardboard, yard trimmings) that would ultimately decompose to produce CO<sub>2</sub> if managed as waste in an aerobic environment.

Heretofore, the practice of assigning landfill sequestration “sinks” to the forest product sector has been irrelevant for purposes of constructing overall international, national or state inventories of GHG emission sources and sinks. However, as international, national and state agencies transition from general inventories to specific measures to control GHG emission from regulated sources, such as CMAC Draft Report, a fundamental tenet must be that the regulated entity has “operational control” over the emission source or sink. No one else but the landfill owner or operator has “operational control” over the landfill. Forests products interests and entities have absolutely no operational control over the materials that end up in landfills. Just as the forest products sector is not claiming responsibility for the methane emissions that are generated by forest products in the landfill – nor should the forest products sector be credited with any emission sink that occurs within the landfill. *The sources and sinks of GHG emissions that occur within the landfill environment should be credited to the entity that has operational control over the landfill – the landfill owner or operator.*

## ***Greenhouse Gas Emission Offset Projects***

We strongly support the statement in the draft report that energy derived from captured landfill gas is a good candidate for offsets and that any energy resources (e.g., electricity, useful heat or fuel) that are produced from landfill gas displacing fossil fuel sources of energy should be eligible for generating marketable GHG reduction credits. In addition, projects that divert materials from landfills should be potentially eligible for offset credits as well. This could include materials diverted to produce electricity or fuel as well as materials diverted to produce alternative recycled products and materials. We fully support the Draft Report recommendations on establishing a system of marketable offset credits, in particular:

- *Offset projects must be real, additional, independently verifiable, permanent, enforceable, predictable and transparent.*
- *A standards based approach should be used to specify the types of projects that are eligible for offsets. In particular we believe that additional recycling, landfill gas to energy/fuel, and direct waste conversion to energy should be identified as projects that are eligible for offset credits.*
- *We hope that quantity or geographic limitations on offsets will be minimized. Certainly, at a minimum, offset projects within the Western Regional Climate Initiative should be freely traded within the Western Region.*
- *Ongoing and periodic reviews of offset projects and entirely appropriate.*

Thank you for the opportunity to review the Draft Report and provide our comments and concerns for your consideration. If you have any questions or require further information, please do not hesitate to contact any one of the undersigned parties to this letter.

Sincerely,

Chuck Helget, for  
Allied Waste Services, Inc.  
(916) 563-7123  
chelgi@worldnet.att.net

Frank Caponi, P.E.  
Supervising Engineer  
County Sanitation Districts of Los Angeles  
County  
(562) 699-7411 x2460  
[fcaponi@lacsdsd.org](mailto:fcaponi@lacsdsd.org)

Kevin H. Kondru, P.E.  
Manager, Environmental Services  
County of Orange, Integrated Waste  
Management Department  
Phone: (714) 834-4056  
[Kevin.Kondru@iwmd.ocgov.com](mailto:Kevin.Kondru@iwmd.ocgov.com)

Don Gambelin  
Vice President  
Norcal Waste Systems, Inc.  
(415) 875-1194  
[dgambelin@norcalwaste.com](mailto:dgambelin@norcalwaste.com)

Mary Pitto  
Regulatory Program Director  
Regional Council of Rural Counties  
(916) 447-4806  
[mpitto@rercnet.org](mailto:mpitto@rercnet.org)

C. David Zeiger  
Area Compliance Manager  
Republic Services, Inc.  
(510) 262-1669  
[zeigerd@reprsv.com](mailto:zeigerd@reprsv.com)

Patrick S. Sullivan, R.E.A., C.P.P  
Vice President  
SCS Engineers  
(916) 361-1297  
[psullivan@scsengineers.com](mailto:psullivan@scsengineers.com)

Tom Reilly, P.E.  
Regional Engineering Manager  
Waste Connections, Inc.  
(925) 672-3800  
[TomR@WasteConnections.com](mailto:TomR@WasteConnections.com)

Charles A. White, P.E.  
Director of Regulatory Affairs/West  
Waste Management  
916-552-5859  
[cwhite1@wm.com](mailto:cwhite1@wm.com)

Cc: Eileen Wenger Tutt, Assistant Secretary for Climate Change Activities, Cal/EPA  
[etutt@calepa.ca.gov](mailto:etutt@calepa.ca.gov)

Margo Reid Brown, Chair, CIWMB [mbrown@ciwmb.ca.gov](mailto:mbrown@ciwmb.ca.gov)

Mark Leary, Executive Director, CIWMB [mleary@ciwmb.ca.gov](mailto:mleary@ciwmb.ca.gov)

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